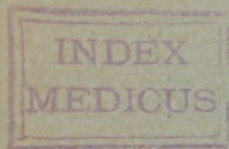


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Report of a Case of Cerebral Tumor, Diagnosed by Focal Symptoms, with Operation, Suc- cessful Removal of Tumor and Exhibition of Specimen.



Read before the Chicago Medical Society, Dec. 18, 1893.

BY D. A. K. STEELE, M.D.

CHICAGO.

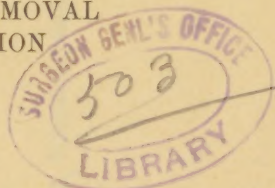


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REPORT OF A CASE OF CEREBRAL TUMOR,
DIAGNOSED BY FOCAL SYMPTOMS, WITH
OPERATION, SUCCESSFUL REMOVAL
OF TUMOR AND EXHIBITION
OF SPECIMEN.

BY D. A. K. STEELE, M.D.
CHICAGO.



In reporting to you a case of cerebral tumor diagnosed by focal symptoms and successfully removed, I desire to express my obligations to Drs. R. H. Isbester, O. A. King and W. E. Quine for a careful history, thorough examination and accurate diagnosis of the case before it was referred to me for operation, and to Dr. T. A. Davis for valuable assistance during and after the operation.

The subject of cerebral tumors became interesting to surgeons in 1879 through the reports of cases by Macewen of Glasgow, and again especially in 1884, when Bennett and Godlee of London, arrested the attention of the surgical world by their narration of the diagnosis and removal of a subcortical tumor of the brain. Since then, many cerebral tumors have been diagnosed by focal symptoms and a few successfully removed. Horsley, Keen, Hirshfelder, Morse, Deaver, Nancrede and others have reported cases.

I desire to submit the following case as an addition to the literature of the subject:

The patient was referred from the Dispensary clinic of the College of Physicians and Surgeons to my regular Saturday clinic for operation in the early part of October. When I first saw the case I made a thorough examination, and placed the patient on large doses of iodid of potassium for the purpose of clearing up the question as to whether or not there might be syphilitic brain disease, although no history of any was elicited. Specific treatment pro-

Round sarcomatous cells.

Brain sand.

Endothelial pearl. sarcomatous

Arteriole

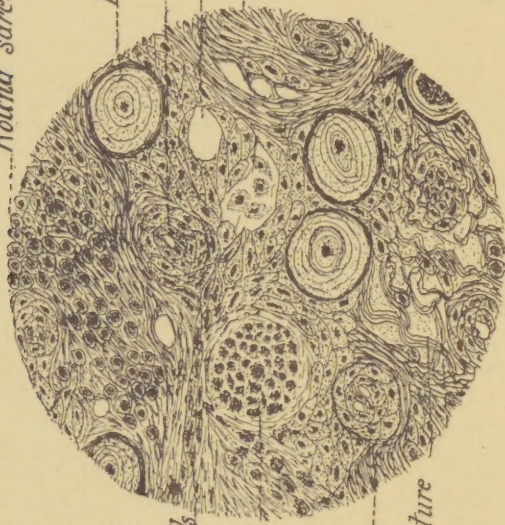
Fibrous tissue.

Spindle shaped sarcomatous cells

Aggregation of sarcomatous cells

Endothelial pearl

Alveolar fibrous structure



ENDOTHELIAL FIBRO-SARCOMA OF BRAIN.

duced no effect on his symptoms. November 18 the patient was operated upon. The history was as follows:

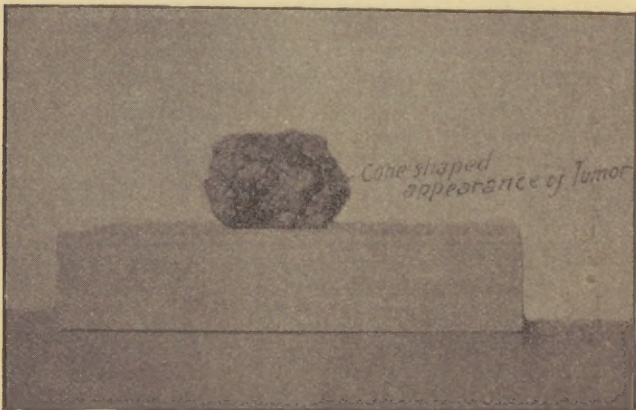
The patient, John Pierson, was born in Sweden, Jan. 18, 1852; he is 41 years old. He is the eldest of nine children, four boys and five girls. His family was always very healthy. His mother, brothers and sisters are living. His father died of old age at 77. He is a laboring man; married and has six children, four girls and two boys, all of whom are living. Upon arriving in this country, May 15, 1881, he went direct to Batavia, Ill., where he remained six years. He then went to St. Charles, Ill., and lived there until he came here for treatment.

About five years ago the patient while asleep in bed was aroused by a sharp pain of a cramping character, in the calf of the right limb, which lasted from two to five minutes. It was very severe. This pain and the following plantar contraction of the toes, constituted the first attack. About one week later he had a second cramp, which was in severity the equal of the first. It occurred in the same region and was about the same duration. The cramps appeared at an interval of seven or ten days and were about as severe as the first. Just preceding a spasm there was a prickly, parasthetic feeling in the locality of the expected monospasm. Two things characterized these spasms: 1, that they extended up the right limb gradually until they reached the right groin; they then passed into and extended in the lower part of the trunk, when they became more painful; 2, after each spasm the limb was weaker, so that as the spasms became more frequent they caused a general weakening of the muscles and therefore lameness. The spasms continued to extend upward until the right arm and the face were affected. It took about one year for the whole right side to become affected. The spasm would always start in the same place, creep upward to the trunk, and then die away before the arm and face were affected. After the right side was affected the patient sometimes had a prickling sensation in the left leg, but at no time were there any spasms. During the whole period of five years the patient never had an attack of unconsciousness. He often had very severe headaches, starting in the occipital region and extending to the frontal.

Examination showed motor paralysis and sensory blunting of the right leg; the right patella tendon reflex was much increased; hearing was much reduced in the right ear; there was no choke disc or optic neuritis; none of the orbital muscles were involved. Speech was slow. A diagnosis of cerebral tumor originating in the leg center of the cortical area of the left hemisphere of the brain, and extending downward and forward to the arm and face centers was made, and operation advised, after specific treatment was tried without avail.

The patient was prepared and I was ably assisted during the operation by Dr. T. A. Davis. The toilet of the operating field was thoroughly made the previous day; shaving and cleansing, and a wet 1-2000 bichlorid dressing applied to be worn until time of operation.

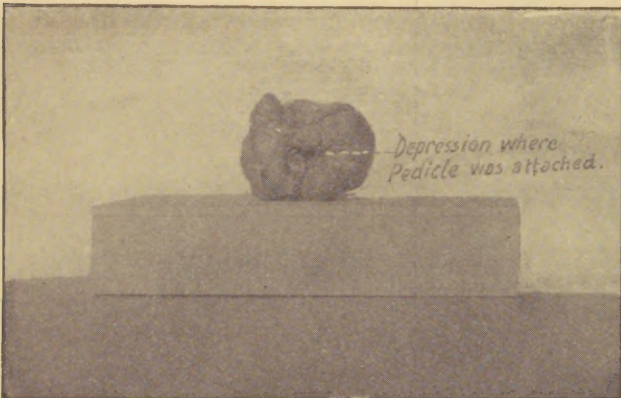
After the patient was thoroughly under chloroform a small solid cylindrical rubber band was passed around the head to render bloodless the field of operation in the scalp. Four stitches, as recommended by Dr. F. Shafer of this city, were introduced equidistant apart, binding the rubber constrictor to the scalp so as to prevent slipping. Owing to the extent of the symptoms, showing that the convolutions of the upper half on either side of the Rolandic fissure were involved, the nicety of delicate cerebral localization technique was dispensed with and a horse-shoe shaped flap of three



Endothelial fibro-sarcoma of brain; weight 60 grams; base of tumor showing depression at point of attachment.

inches width was turned down and fixed with one stitch to the integument beneath, to keep it out of the way of the operator. A large button of bone was then removed and the opening enlarged by the rougeur to a size corresponding to nearly that of the scalp flap, a little over three inches in diameter and heart-shaped. Palpation through the meninges showed great resistance over the region corresponding to an inch each side over the upper third of the Rolandic fissure. Below this region the resistance was normal. On opening through the meninges there was found absence of pulsation over the region corresponding to the part offering great resistance to palpation, and slight pulsation below that region.

Faradization with a double brain electrode over the dense tissue was followed by no muscular response, but at the lower margin of this tissue, and on down the Rolandic marginal convolutions there was responsive contraction of arm muscles, increasing as it distanced the dense tissue. Macroscopically the dense tissue presented a yellowish color and bulged into the wound. On digital exploration a tumor of considerable dimensions was found extending down into the brain and readily separable from it, a few slight adhesions of the tumor capsule alone offering any barrier. After outlining the free borders of the growth, a firm pedicle was found attached to the skull, or falx-cerebri at the region of the superior longitudinal sinus. The tumor was "shelled out" quite readily with the fingers leaving the firmer portion, the pedicle, which was removed with a strong curette,

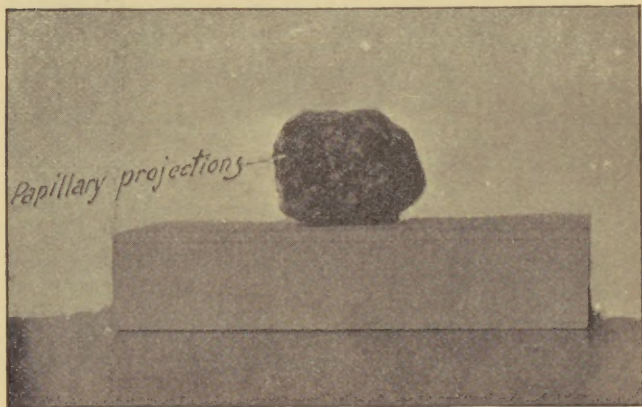


Endothelial fibro-sarcoma of brain, side view.

after cutting the skull away up to it with the rougeur forceps. A large rent in the superior longitudinal sinus was necessarily made on removing the pedicle, which necessitated firm packing with iodoform gauze of the whole intra-cranial wound. This readily controlled the hemorrhage, which was enormous for a few seconds; but it prevented the satisfactory closure of the wound with the return of the bone chips. The regular antiseptic dressing was applied and was not disturbed for three days, when the bulk of the gauze dressing was removed, leaving only one small piece over the rent into the sinus. At the second dressing, four days later the remaining piece of gauze was removed.

Slight constitutional disturbances followed the operation; temperature 101 degrees; operation fever for thirty-six hours followed by a decline to normal on third day. There

was complete motor paralysis of arm and leg for twenty-four hours following the operation, at the end of which time slight motion returned to leg, and nineteen days later some motion was observed in the arm. Slight but steady improvement has occurred since that time. Although we expected from the origin of the tumor that sensation and motion would return in the arm first, as a matter of fact they returned promptly in the leg, and later in the arm. Sensation was first felt in the shoulder muscles, the next day he could move the arm and on the third day he could draw up the forearm; and now he has good control of the whole arm except the fingers. He has no power and but little sensation in the fingers. He tells me that he is capable of exercising some muscle or making some new movement each day. The patient is now able to sit up, is permitted to walk a little and is anxious to return to his home in time for Christmas.



Endothelial fibro-sarcoma of brain, convex surface.

The packing prevented the accurate suturing of the scalp; there was an opening of perhaps two inches through which the ends of the strips of gauze were drawn out. At the end of a week these edges were freshened and re-sutured. Now we have a small opening of half an inch through which I keep a minute strip of gauze for capillary drainage. There is granulation tissue covering the wound, and the patient has practically recovered. One week later the wound had firmly cicatrized and the patient returned home.

In regard to the character of the tumor, the specimen was submitted to the Pathological Laboratory of the College of Physicians and Surgeons. The examination was made by S. J. Sornberger and Prof. Evans. Under microscopical examination, both of the longitudinal sinus, that is, the pedicle of the tumor, and the tumor itself, the following characteristics are presented:



Appearance of operation-wound at time of report.

1. An abundant fibrous stroma, alveolar in appearance.
2. An abundance of endothelial cells, both large and small. These cells are in places crowded together in dense concentric masses, while others are scattered profusely among the fibers of connective tissue.

3. Calcareous granules, quite abundant, distributed throughout, but rather more abundant in the small tumor from the sinus, and near its upper margin.

Diagnosis.—Endothelial fibro-sarcoma.

Remarks.—As you examine the tumor which I submit to you for inspection, you will observe that it is cone-shaped, bearing a striking resemblance to a small pine cone, although somewhat more irregular in outline. It weighs exactly two ounces. Its vertical diameter is two and a half inches and the transverse diameter two inches. The base is smooth and slightly depressed in the center where it was plucked from the stem or pedicle. The surface presents a papillomatous appearance, small finger-like or tuberculous processes extending downward and outward in all directions but more marked around the apex of the tumor. If we invert it and place it in the same position it occupied in the brain, you will observe that it grows downward and forward from its point of origin in the wall of the longitudinal sinus into the Rolandic fissure, displacing the paracentral lobules, and the surface irregularities are probably due to the varying amount of brain resistance to the outgrowth of the tumor. Some portions of it lying in the great fissure and the smaller projections pushing between the convolutions.

The reaction under the double brain electrode may be explained in part by the atrophy of the adjacent portion of the brain, or motor cells from pressure, and in part by mechanical displacement.

We would infer that the failure to elicit reflex spasm by electric stimulation of the leg center was due to mechanical displacement of the center upward and backward by the tumor, when we find that the removal of the tumor was followed by a prompt return of sensation and motion in the leg. While the slower return of the same function in the arm speaks for pressure atrophy of the motor cells of the arm center.

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